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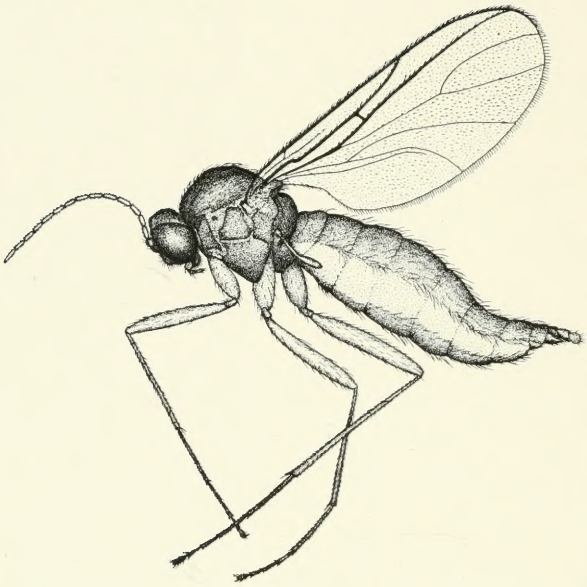

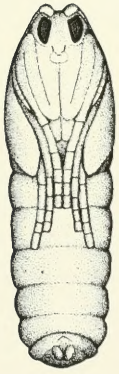

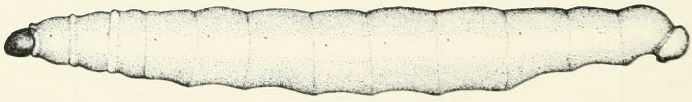

NEOSCIARA MACFARLANEI.—JONES.
ADULT FEMALE, PUPA, EGG, MALE HYPOPYGIUM, LARVA.

ENTOMOLOGICAL NEWS

AND

PROCEEDINGS OF THE ENTOMOLOGICAL SECTION

THE ACADEMY OF NATURAL SCIENCES, PHILADELPHIA.

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Another Pitcher-Plant Insect (Diptera, Sciarinae).

By FRANK MORTON JONES, Wilmington, Delaware.

(Plate I.).

The captures of *Sarracenia*, especially those of the larger southern species, offer many surprises: as we pass from one tall "pitcher" to another, lifting their lids and peering down the narrowing tubes, we find recent captures,—moths, beetles, flies, wasps, grasshoppers, representatives of most of the principal orders of insects,—attempting to scale the vertical walls which have already proved fatal to the earlier victims whose remains fill the lower tubes; we recognize the usual guest insects, *Exyra*, *Sarcophaga*, *Isodontia*, or the indications of their presence; and if the season and locality be favorable, we may soon find a "pitcher" whose tube, some inches below the top, is closed by a mass of whitish froth-like filaments

suggestive of a mold or fungus, but which closer examination shows to be the product of certain slender yellowish white or yellow larvae which are feeding upon the captured insects, the froth-like mass being spun by those about to pupate, usually on the upper surface of the accumulated insect remains. Attention to this insect was first called (in 1909) by Dr. John M. Macfarlane, who has so ably monographed the *Sarraceniaceae;* at that time, in the Sarracenia-house of the Botanical Laboratory of the University of Pennsylvania, the presence of these insects occasioned some alarm for the safety of the plants, until their feeding habits were determined; subsequent observations in the field have resulted in the discovery of this insect in the pitchers of *S. sledgei* in southern Mississippi, in *sledgei* and *drummondii* in southern Alabama, in *S. rubra* and *S. flava* in North Carolina, and in *S. minor* and *S. flava* in South Carolina. Thus widely distributed, and associated with every species of *Sarracenia* whose structure is favorable to its presence, this insect is probably, like the associated Sarcophagid flies (Aldrich, Sarcophaga and Allies in North America, Thomas Say Foundation, 1916, pages 88, 89), exclusively a pitcher-plant insect; Dr. Johannsen has kindly determined that it belongs to an undescribed species, in Pettey's key (Annals Ent. Soc. Am., XI, 319) going with *Neosciara coprophila* and *N. caldaria*, from which it is readily separable by the ♂ hypopygium, which in the new species resembles that of *jucunda* (Johannsen's figure 123), though lacking the transverse row of setae, and in wing venation having the petiole of the cubitus longer and R^1 shorter than in *jucunda;* its description follows:

Neosciara macfarlanei nov. sp.

Egg.—Pear-shaped, .38 mm. long, .21 mm. greatest width; translucent, polished, pale yellow; deposited on inner leaf wall above the insect remains.

Larva.—Of the usual *Sciara* form, with brownish-black chitinized head; in color varying individually from yellowish white to rather bright yellow; the dark contents of the digestive tract, in which insect fragments are recognizable, showing through the translucent integument; segments 6, 7, 8, and 9 of almost uniform diameter, from these tapering somewhat anteriorly and posteriorly; eight pairs of spiracles marked by minute pol-

ished black rounded protuberances; length before pupation 10 mm.; usually from three to a dozen or more larvae occupy an infested pitcher.

Pupa.—Suspended among or imbedded in froth-like white filaments; often several pupae in close proximity in a common froth-mass which is denser about each pupa, thus approximating a frail cocoon-like structure, from which the pupa pushes its way before emergence of the fly; pupa yellowish white, soon darkening, especially the eyes, with the pigmentation of the imago; base of antennae prominently arched over the eyes, but not in contact medially; abdominal spiracles marked by minute concolorous pointed projections; length about 4 mm.

Imago, ♂ and ♀.—Length 3 to (♀) 3.8 mm., dry; live females often slightly exceed 4.5 mm.; fuscous black to black; head and thorax denser in color than the abdomen, somewhat polished, finely punctate, hairs black. Eyes black, finely pubescent, their finger-shaped frontal projections failing of contact by less than width between antennae; lateral ocelli remote from eye-margins, inclined on a rather prominent ocellar protuberance. Palpi and antennae smoky; intermediate joints of the flagellum twice as long as wide, last flagellar joint elongated; antennae of ♀ about one-sixth shorter than those of the ♂.

Halteres slender, finely pubescent, smoky, the stems pale; coxae and femora brownish-yellow, with dark hairs; tibae darker, more smoky, and tarsi almost black; trochanters dark beneath; length of hind tibia to tarsus, as 100 to 85.

Wings brownish-hyaline; costa, radius, and R-M cv. setose; cubitus and media not setose, except that basal section of media of ♂ usually bears one or two setae; costa produced fully two-thirds of way from Rs to M1; Rs and M2 end about equidistant from the base of the wing; the base of Rs is slightly distad of the mid-point between the humeral crossvein and the tip of R1; subcosta very faint, ends free, proximad of the origin of Rs; R1 ends slightly proximad base of fork of M (in measured wings, from one-twenty-sixth to one-tenth of the wing-length proximad); petiole of cubitus about same length as basal section of media.

Abdomen black-haired; lateral band (in fresh examples) yellowish brown; the distended body of the ♀ dries to an almost uniform smoky brown, paler than that of the ♂; hypopygium dark, claspers subglobose, shortly stemmed to and more than half as long as the preceding joint, and with no mesal processes or differentiated apical spines: lamellae of ♀ ovipositor about one and one-third times as long as broad.

Localities: Summerville, South Carolina; Southern Pines, North Carolina; Theodore, Mobile County, Alabama; Biloxi and Wiggins, Mississippi; Philadelphia Pennsylvania (introduced).

Described and illustrated from numerous examples from all of the stated localities; a male and female, mounted in

balsam, from Theodore, Mobile County, Alabama, are designated as the types, and with other type material are deposited in the Cornell University collection.

In 1910 at Biloxi, Mississippi, as early as March 10th, the larvae of this insect were abundant, the pupae occasional, in those pitchers of *Sarracenia sledgei* which had remained green throughout the winter; the earliest observed emergence of the fly occurred March 27th; the eggs are deposited in the new pitchers of the season, soon after these have commenced to capture insect prey, and the insect in its various stages occurs in the pitchers throught the summer months, no regular succession of broods being observed, though very irregular in its comparative abundance from year to year, and in its recorded localities.

The Bembicine Wasps of North Carolina (Hym.).

By M. R. Smith, Raleigh, North Carolina.

(Continued from page 82).

B. spinolae Lepelletier.

This is one of the most common species in North Carolina and may be generally recognized by the clear wings; short, fairly dense pubescence on the head, thorax and base of abdomen and by the white curved bands on the second, third and fourth abdominal segments. Length 14-17 mm.

Specimens were collected at the following localities: Raleigh, L. July, 1906, and E. August, C. S. B.; Landis, E. Sept., 1919, J. E. E. 11 specimens: 4 females, 7 males.

B. belfragei Cresson.

The specimen in our collection, a male, is rather robust, widest at the base of the abdomen and tapering apically. The bands on the first three abdominal segments are rather prominent, the first being the broadest. The bands on the second and third segments are widest laterally, arcuated and attennuated medially. All the bands are interrupted. The labium in both sexes, when viewed from the side, shows a distinct transverse impression. The last dorsal abdominal segment is wrinkled. Length 16–18 mm.

One specimen collected at Southern Pines, June 6, 1906, R. S. W.

KEY TO SPECIES OF BICYRTES

Males

1—Middle femora with distinct tooth at base; last dorsal abdominal segment black; bands on dorsum narrow ..... *ventralis.*
1—Middle femora without tooth at base ..... 2.
2—Flagellum black ..... *quadrifasciata.*
2—Flagellum not wholly black· legs black and ferrugineous, markings deep yellow, frequently with dashes of ferrugineous ..... *capnoptera.*

Females

1—Mesopleurae black ..... 2.
1—Mesopleurae not black, marked with yellow. Discal spots on scutum absent or present in the form of narrow yellow lines .... *quadrifasciata.*
2—Sixth dorsal abdominal segment with a well defined pygidial area, set off by distinct lateral ridges ..... *capnoptera.*
2—Sixth dorsal abdominal segment without a pygidial area or well defined lateral ridges, underside of this segment without a median longitudinal ridge ..... *ventralis.*

Bicyrtes quadrifasciata Say.

One of the largest species in the genus. The ground color of the body is black with a bluish iridescence. The bands are broad at the sides and narrowed medially; narrowly interrupted anteriorly, more widely posteriorly. Length 12–14 mm.

Collected at the following localities: Southern Pines, July, A. H. M; Swannanoa, M. July, 1919, R. W. L.; Wilson, E. July, 1906, R. S. W.; Statesville, M. July, 1919, F. S. 8 specimens: 5 males, 3 females.

B. ventralis Say.

♂—Black; Labrum, scape of antennae below, broad anterior and narrow posterior orbits, posterior margin of pronotum including lateral tubercles, rounded lateral spots on scutellum, band on metanotum, lateral angles of median segment, narrow band on dorsal abdominal segments 1–6 narrowly interrupted medially, yellow. The color markings and also the arrangement of the bands are variable and too much dependence should not be placed on them as specific characteristics.

One specimen, collected at Raleigh, M. June, 1906, R. S. W.

B. capnoptera Handlirsch.

The four specimens differ from Parker's description in that the labrum is black, the apical edge of the clypeus is fringed with black and there is no yellow spot between the antennae. In one specimen the antennae are more or less ferruginous, and there are lateral lines on the scutum above the bases of the wings. Another specimen has black antennae and is devoid of the lateral lines on the scutum. The last dorsal abdominal segment in the four specimens has distinct lateral ridges; the mesopleurae are black and the bands on the abdomen are narrowed laterally. Length 10–15 mm.

Specimens were collected at: Cranberry, M. Oct. 1907, F. S.; Raleigh, E. July, 1911, Z. P. M.; Wilmington, M. Oct., 1919, M. R. S. 4 specimens, all females.

Stictia carolina Fabr.

This large handsome species is commonly known as the "Horse Guard," from its habit of being predaceous on horse flies. It is no unusual sight to see this wasp darting around horses in search of the flies that are such a nuisance to our faithful animals.

The males have fewer markings on their abdomens than the females, and are also more robust in appearance. They may be recognized by the curved tooth on the distal end of the middle femora and by the pair of lateral spines on the last dorsal segment of the abdomen.

The female has bands on the first five segments of the abdomen; the first two segments have the bands interrupted medially, the third segment has four yellow spots, while the fourth and fifth segments have a pair of lateral spots respectively. Length 24–28 mm.

Specimens were collected at the following localities: Greensboro, M. July, 1919, F. S.; Beaufort, E. August and L. June, 1903, F. S.; Wilmington, L. Oct., 1919, M. K.; E. August, 1919, R. W. L. 6 specimens: 4 females, 2 males.

Microbembex monodonta Say.

This is a very common species along the eastern coast of the State. In form the species is small, elongate, and has markings which are variable both in color and in their location on the body of the insect. The pubescence on the frons and clypeus of the male has a silvery reflection. On the under side of the second abdominal segment is a smooth median, longitudinal process that terminates posteriorly in a short curved point, which is not hairy.

The females may be distinguished from related species by the pubescence of the head, thorax and abdomen not being unusually long and dense,

and also by the scape of the antennae being black above. Rarely the scape is yellow below.

Length 8–14 mm.

Specimens collected at: Beaufort, E. Aug., 1902; June 15 and 24, 1903, F. S.; Nags head, L. Aug., 1919, F. S. 9 specimens: 5 females, 4 males.

The Eyes of Insects.*

By Alex. D. MacGillivray.

There is always difficulty in differentiating between the kinds of eyes of insects so far as their names are concerned. This becomes especially complicated when it is necessary to compare the eyes of adult insects as those of butterflies or moths with those of their larvae.

All are agreed in designating the large organs of sight composed of several or numerous independent parts as the compound eyes or simply as the eyes. But there is a lack of uniformity, when the names of the parts of a compound eye are considered. The early entomologist designated each of the component parts of a compound eye as an *ocellus*, plural *ocelli*. This led to confusion because the simple eyes of insects were also designated as ocelli. A compound eye is composed of a number of subdivisions, each considered as an independent eye and known as an *ommatidium*, plural *ommatidia*. Each ommatidium consists of an external usually more or less convex hexagonal area of cuticle, the cornea, the crystalline lens or cone, the rhabdome, the retinula cells, the pigment cells, and the nerve connections. Some writers apply the name of ommatidium to one of the entire subdivisions of a compound eye and also to the external area of the cuticle. Others have designated each of the hexagonal areas of the cuticle as a facet and applied the name of ommatidium to an entire subdivision of a compound eye only. It is desirable that these words should be restricted in their use and

*Contributions from the Entomological Laboratories of the University of Illinois, No. 64.

definite in their application; that facet be used for the external surface and that ommatidium be used for the entire element including the cornea and consequently the facet. This provides a taxonomic term, facet, and a morphological or histological term, ommatidium. It is not practical to exclude the facet from inclusion with the ommatidium since the facet is only the outer surface of the cornea which must be considered as a part of each ommatidium. Compound eyes are present in both nymphs and adults of ametabolous and exometabolous insects, but only in the adults of entometabolous insects. The developing compound eyes of the adult can frequently be seen in the pupa of entometabolous insects and rarely in their larvae, but these stages are never provided with functional compound eyes.

Many adult insects have a group of simple eyes located on the dorsal or cephalic aspect of the head. While there are usually three of these simple eyes arranged in the form of a triangle with the apex of the triangle directed toward the mouth, there are never more than three of these simple eyes, sometimes there are only two, rarely only one, and frequently all are wanting. The pair of cephalic discs described by Kochi as probably representing a primitive divided ocellus appears to be only discs for the attachment of muscles. Each of these simple eyes is universally known as an *ocellus*, plural *ocelli*. The ocellus forming the apex of the triangle is known as the median ocellus and each of the others as a lateral ocellus. When only two ocelli are present, it is the median ocellus that is wanting and when only a single ocellus is present. it is the lateral ocelli that are wanting. The ocelli are also known as *stemmata*, singular *stemma*. Ocelli are never present in ametabolous insects and only in the adults of exometabolous and entometabolous insects. They can sometimes be seen as black spots through the transparent cuticle of some nymphs and they have been described as ocelli, but functional ocelli are never present in nymphs, larvae, or pupae.

Ametabolous insects and those with exometabolous metamorphosis, as the nymphs and adults of Collembola, Mallophaga, etc., and the larvae of insects with an indirect meta-

morphosis usually have one or more simple eyes. These simple eyes are located on that portion of the head where, if compound eyes were present in the adult, they would be located. This would seem to be an ontogenetic proof of the contention of Lang and others that the compound eyes of insects are formed from "an increase in the number of primitive eyes, and their approximation, led to the formation of the compound facet eye." In the case of the adult male coccid, the eyes are compound in the four generalized subfamilies and represented by groups of simple eyes in the specialized subfamilies The number of simple eyes in each group is gradually reduced with specialization until in certain highly specialized wingless males, there is only a single ocellus on each side of the head. This is the number found in all adult and nymphal female coccids where eyes are present and in the first and probably some of the later nymphal male stages. A similar series of reductions can be shown from an examination of different genera of Collembola. The latter show a condition which is characteristic not only of nymphs of all stages but of adults, while the male coccids show a condition peculiar to the adult male alone. In the larvae of insects the compound eyes may be represented by groups of simple eyes, a single group may contain as many as twenty or be limited to a single simple eye on each side of the head, but the usual number is about six. The representation of compound eyes by simple eyes is peculiar in this group to the larval stages.

All these various types of simple eyes, those of the Collembola, of the coccids, and of larvae are also designated as ocelli. The use of the same name for two or more structures which are always different in position, whether they are different in structure or not, always leads to confusion. In order to differentiate between the simple eyes of the Apterygota and the ocelli and simple eyes of other insects it is suggested that each of the simple eyes of the Apterygota be known as an *ocellula*, plural *ocellulae*. The simple eyes of those insects with an exometabolous metamorphosis, whether found in nymphs or adults, to be known as *ocellanae* to distinguish

them from ocelli, ocellulae, and the simple eyes of larvae. The simple eyes of larvae, the immature feeding stages of entometabolous insects, are to be known as *ocellarae*.

Ocellulae and ocellarae of each side of the head are usually closely associated and are generally placed upon an area that is very different in color or is more convex or elevated above the adjacent parts of the cuticle. Each of these areas has previously been designated as an ocularium.

The pupae of insects with an entometabolous metamorphosis are never provided with eyes. In many species, where the cuticle is thin and transparent, the developing compound eyes and sometimes the ocelli of the adult, as already noted in the nymphs of exometabolous insects, can be identified through the cuticle. Such eyes or ocelli are never functional in pupae and are incorrectly described or designated as the eyes or ocelli of pupae as is sometimes done.

A Mexican Species of Agrilus found in Arizona (Coleoptera).

By W. S. Fisher, U. S. Bureau of Entomology,
and Alan S. Nicolay, Brooklyn, New York.

This species was described by Waterhouse (1889, Biol. Centr.-Amer. Coleopt., vol. III, p. 119, tab. VII, figs. 7, 7a) from Pinos Altos, State of Chihuahua, Mexico, from a male specimen. This species is remarkable for its sexual color dimorphism, which as far as known, is not found in any of our other North American species. As the female has never been described and to assist those who have no access to the works in which the Mexican species, herein recorded, is described, we have given a description of the species, hoping it will prove more useful than simply recording its appearance in the United States.

Agrilus restrictus Waterhouse.

♂.—Moderately elongate as in *arcuatus*, head, thorax and beneath brassy; elytra slate color, shining. Antennae brassy, reaching to middle

of prothorax, serrate from the fourth joint. Head closely and coarsely punctured; front broadly and rather deeply longitudinally impressed.

Prothorax one-fourth wider than long, not narrowed at base; sides slightly arcuate; surface rugous, with coarse distantly placed punctures in the depressions; discoidal impression deep, broadly ovate behind, narrowed in front; the lateral impressions deep, extending from the anterior third, obliquely backward to middle of the disc; there is a round swelling at the posterior angles, with a round fovea behind it close to the base; posterior angles without any trace of a carina. Scutellum deeply impressed in the middle and finely rugous. Elytra slightly sinuate behind the humeri and dilated behind the middle, nearly concealing the abdomen; apices separately rounded, finely serrulate; disc slightly flattened at middle, basal impressions moderately deep; sutural ridge elevated behind the middle; surface densely imbricate, shining. Prosternal lobe broadly emarginate. Prosternum coarsely punctured, the punctures becoming denser on the intercoxal process, not pubescent; intercoxal process with its margins slightly raised, the apex obliquely narrowed.

Abdomen moderately strongly punctured, slightly rugous at the sides; lateral carina of the basal segment distinctly curved; first ventral segment roundly convex at middle, not pubescent; suture between the first two ventral segments entirely obliterated at the sides; vertical portions of all the segments, except the last, pubescent posteriorly; pygidium not carinate.

Anterior and middle tibiae arcuate, with a slight mucro at the inner apex; the posterior tibiae simple, flattened on the inner side, and with a row of stiff hairs on the posterior half of the outer edge. Claws broadly toothed. the lower portions not inverted, similar on all feet. Posterior tarsi not as long as the tibiae; the first joint one-fourth as long as the tibia. Length 8.5 mm.; width 2.2 mm.

♀.—Differs from the male as follows: More robust, head, thorax and beneath cyaneous; elytra cupreous, shining. Antennae shorter, only reaching a little beyond the anterior margin of the prothorax; vertical portions of the abdominal segments more distinctly visible frum above; tibiae not mucronate; fore tibiae slightly arcuate; middle and hind tibiae simple. Length 10 mm.; width 3 mm.

One pair of adults taken *in coitu* in the Huachuca Mountains, Arizona, August 2, 1905, and donated to Mr. Nicolay by Mr. Chas. W. Leng. Specimens in Mr. Nicolay's collection.

In Dr. Horn's table of *Agrilus* (1891, Trans. Amer. Ent. Soc., vol. XVIII, pp. 283–287) these specimens run to *concinnus* Horn, but differ from that species by the different coloration in the sexes; the last abdominal segment rounded

at the tip, while in *concinnus* it is truncate, and in numerous other characters.

This species has never been reported from the United States, but since the fauna and conditions of the country in the southern part of Arizona are very similar to those of Pinos Altos, Mexico, from where the species was originally described, it is not surprising that it should be found in our fauna. The specimens were sent to Mr. Gilbert Arrow, who has kindly compared them with the type in the collection of the British Museum, and has returned them with the following remarks:

"The male is like *A. restrictus*, except that the median fovea of the thorax is less broad behind in the unique type. Without examining a series of specimens I cannot tell whether this is of importance."

In examining a series of specimens of some of our other species which have the thorax deeply impressed, this character was found to vary considerably in the different specimens, so it is possible that the same condition will be found in *restrictus*.

A new Euphydryas from Nebraska (Lep.).

By R. A. Leussler, Omaha, Nebraska.

Euphydryas bernadetta n. sp.

♂.—Expanse 38 mm. *Upperside:* Primaries black, an irregular keystone-shaped white spot at base of cell, another large quadrate one in middle of cell, and three oblong conjoined ones at the distal end; between these several white spots in the cell are two red spots bordered with black; beyond the cell three irregularly curved rows of white spots, the inner row slightly tinged with red, and preceded on inner margin by a large white irregular spot, the outer row somewhat lunulate; all of the spots well separated from each other and from the other rows by the black ground color; a terminal row of small red spots; fringe black-and-white-checkered. Secondaries black, a median row of oblong white spots, beyond this a row of red spots, another row of white spots and a terminal row of red spots; an irregularly shaped white spot at end of cell; one near base of cell, another near base at costa, and a fourth above anal margin; beyond cell is a narrow red spot; all spots well separated by black ground color as on primaries; fringe black-and-white-checkered.

Underside: Primaries red, with the white spots all repeated, the subterminal ones enlarged, distinctly lunulate and separated by a heavy black line across apical half of wing; spots all well defined. Secondaries: red and white spots of upperside reproduced beneath greatly enlarged, the only black being the defining lines between spots; submarginal white spots lunulate. All the red on this insect is between Brazil red and scarlet (Ridgway Color Standards Pl. 1).

♀.—Expanse 47 mm. *Upperside:* Quite similar to ♂ in maculation but the white spots are larger, especially the outer row and these too are distinctly lunulate. *Underside:* Less red than ♂ with the white spots larger.

Described from 26 ♂ and 16 ♀ collected in Monroe Canyon near Harrison, Sioux County, Nebraska. Types in the collection of R. A. Leussler, Omaha.

This species is nearest *maria* Skinner; in fact examination of the genitalia places it very close to this species and it may prove to be a race of the same. It is quite variable in size, wing shape, color of spots, etc., but can be separated from *maria* by one very constant character, namely, the distinctness of white spots on underside of primaries, the outer rows being clearly defined by black borders of varying width.

A new Species of Coenosia from the Western United States (Diptera, Anthomyiidae).

By J. R. Malloch, Urbana, Illinois.

The species described herein has been in my hands for two years and the description is printed now to enable the subsequent publication of a key to the species from the United States.

There is no species with three bristles on the hind tibia which has the same color, and hypopygial and apical tergal characters as this.

Coenosia cilicauda sp. n.

♂ and ♀.—Black, opaque because of a dense coating of gray pruinescence; proboscis, femora and hypopygium shining. Antennae and palpi black. Thorax not vittate. Abdomen with two pairs of dorsal fuscous spots, on third and fourth segments, and sometimes a very indistinct pair

on second in male. Legs black, all tibiae yellowish testaceous. Wings and calyptrae whitish. Halteres yellow.

Each orbit with 4 or 5 bristles and a few hairs; cheek distinctly higher than width of third antennal segment, the apex of latter about one-third of the length from lower margin of face; arista short-haired. Acrostichals irregularly two-rowed; lower stigmatal bristle long, directed downward.

Abdomen of male longer than thorax, slender, cylindrical, basal hypopygial segment globose, subequal in length to preceding segment, forceps long, extending to base of fourth tergite, both forceps stout, slightly tapered apically, the superior pair fringed on sides with minute hairs; abdomen of female tapered apically, the fourth tergite with a rather dense fringe of stiff bristly hairs at apex.

Femora stout, mid and hind pairs with two or three long bristles on basal half of antero- and postero-ventral surfaces and the hind pair with two or three similar bristles on apical half of antero-ventral surface; in addition to those bristles there are some shorter setulae between them which are most noticeable in the male; fore and mid tibiae with the usual bristles, hind tibia with three bristles, one antero-ventral, one antero-dorsal, and one postero-dorsal; hind tarsus with the basal segment about one-third as long as tibia, a short setula near base on ventral surface. Lower calyptra much larger than upper.

Length, 3.5–4 mm.

Type, male, and *allotype*, Musselshell, Montana, August 30 and 17, 1917. *Paratypes*, two males, Huntley, Montana, July 23, 1917; one female, Miles City, Montana, July 21, 1915; one female, Bozeman, Montana, July 7, 1917; two males, Saguache, Colorado, September 3, 1917 (A. K. Fisher).

The type and allotype will be deposited in the collection of the Montana Agricultural Experiment Station. Paratypes will be deposited as follows: one male and one female, Illinois State Natural History Survey; two males, U. S. Bureau of Biological Survey; one male, Boston Society of Natural History; one female, Academy of Natural Sciences of Philadelphia.

ENTOMOLOGICAL NEWS

PHILADELPHIA, PA., APRIL, 1920.

The Urgent Necessity of Higher Salaries for Entomologists.

We have received from "a group of younger Entomologists" a letter and a printed statement entitled "American Entomology: Its Present and Future Status as a Profession." The justness of the claims urged therein is so apparent and the emergency is so pressing that we reproduce a large part of the statement herewith.

That men of science, particularly those engaged in research and teaching, are greatly underpaid, is a fact so well known that it needs no setting out here. This applies, perhaps, more especially to Entomology than to any other one division of the basic Sciences.

We have in mind a case that came under our observation a short time ago, the case of a young man, very greatly interested in his work, capable, ambitious and diligent. The only misfortune that apparently handicapped this gentleman was a wife and two children. This young man entered the employ of a certain Department of Entomology four years previous at a salary of $1000 per annum, giving up a position of some importance and much larger remuneration for his services in doing so. After one year of faithful service he was raised to $1200 and had remained at this salary for three years. Apparently every effort had been made by his immediate superiors, without avail, to have his salary increased. Twelve hundred dollars is decidedly not a living wage for a family of four.

For several months the young man tried various enterprises outside of working hours to remedy the situation. These eventually encroached on official time as the situation became more and more acute. He gave less and less thought to his professional work and more and more to the question of making income and expenses meet. After a time the situation became so desperate that the young man resigned his position and entered business. At the present time he is enjoying considerable success in a commercial enterprise. Let us repeat that this young man was an excellent investigator and an Entomologist of great promise.

It may be pointed out by some that the case herein mentioned is an extreme case but we now have under observation several instances which are nearly parallel.

Now there are positions open for a certain number of Entomologists, positions which must be filled by someone, and which should be filled by those most fitted by training and experience. Yet many of these positions are filled by a shifting group of men, the cycle appearing to travel in some

such manner as this. A young man fresh from college, fired with enthusiasm and with ambition, enters one of these positions. He has no experience and little training, yet is possessed of great energy and is very industrious. He accepts the low salary offered in expectation that increases will be given as he becomes of greater value to his employer. He labors for from three to five years, we will say, under these conditions. Increases are extremely slow, yet at first his enthusiasm overcomes this drawback. Gradually his enthusiasm and ambition dwindle as the question of food, clothing and shelter becomes more and more pressing, and as he observes his former associates advancing in other lines of work. Finally he resigns and goes to more profitable employment, perhaps retaining Entomology as a hobby, his place being filled by a victim fresh from school who will unquestionably follow in his footsteps. These years of training and experience are lost to him and to the science in which he would make large sacrifices if it could but supply him with a compensation sufficient to enjoy the necessities of life.

A scientific field replete with a shifting group of workers reflects but little credit on any profession and we will emphatically say that teachers do wrong in urging students to take up the profession without presenting the whole truth.

A man who, in his heart, really wishes to be a Naturalist is willing to give up most of the best things that life has to offer, but by entering the field of Entomology one should by no means infer that he must become a vagabond. There are, to be sure, a few fairly well paid positions available, but these are filled by men who occupy them for long terms of years and usually nothing less than death renders the positions available for the younger men.

In the past Entomology has been as much a hobby for private workers as a profession wherein men might earn a living. A large proportion of the constructive workers in the subject have been dependent on other fields of endeavor for their financial support, and have turned to Entomology for their recreation. How much greater service they might have rendered to the science if it had been possible for them to devote all their energy to it. This condition still remains, perhaps to a less degree. As long as this continues it is doubtful whether Entomology will take its place among the greater sciences to which its importance entitles it. We are glad men have such attachments for a subject; we are glad ours is a study which can thus afford men a recreation and which is at the same time a distinct service. But we would lift it from the rank of a hobby into the status of a pleasant and fascinating profession.

How then is this condition to be remedied, for it must be relieved shortly. The younger worker can help himself but little. It remains, therefore, for the men in the highest positions to awaken to the conditions and bend every effort to raise the standard of the profession thru fair salaries for their assistants.

Notes and News

ENTOMOLOGICAL GLEANINGS FROM ALL QUARTERS OF THE GLOBE

Callosamia carolina and Samia securifera (Lepid., Saturnidae)

Mr. W. C. Dukes of Mobile, Alabama, has sent me a cocoon of *Callosamia carolina*, described by F. M. Jones in this journal (Vol. XIX, p. 231, 1908). The type came from Berkeley County, South Carolina. In ENTOMOLOGICAL NEWS, XX, p. 49, 1909, Mr. Jones figured and fully described the species. It is probably quite distinct from *C. angulifera*.

In Beitrage Zur Schmetterlingskunde, Mossen and Weymer, (Elberfeld, 1872), there is figured, in both sexes, what they call *Samia securifera*, (figs. 50, 51) from Central America. This is probably the same species as *carolina*. Mr. Dukes has extended the range of *carolina* and it will be interesting to compare Central American species or specimens with *carolina* when they are found.—HENRY SKINNER.

Notes on the Oviposition and Food of the Wheel-bug (Arilus cristatus Linn.) (Hemip. Heter).

During the months of September and October, 1917, the wheel-bug' *Arilus cristatus* Linn. was very numerous on flowers, especially goldenrod, along the Potomac river near Williamsport, Md. Fifty specimens could easily be taken in the space of an hour—the females somewhat more numerous than the males.

On September 30, it was noticed that the adults were especially active in copulation, although they were observed thus engaged several weeks previous and somewhat later than this date.

Females oviposited readily and usually deposited all of their eggs at one laying and in one mass. For sixteen females that oviposited in captivity, the largest number of eggs was 182, the smallest 60 and the average was 130.6. The exact number of individual eggs per female was 118, 60, 132, 144, 137, 152, 90, 126, 169, 97, 171, 182, 103, 148, 136 and 126.

Eggs were deposited in rearing cages on the cover of salve boxes and on the sides or top of screen cages. Masses were found in the field only on the trunk and lower limbs of trees.

Adults were found feeding on honey bees and grasshoppers in the field. In cages they readily attacked and devoured kaytdids, adult Meloidae, adults of *Cyllene robiniae*, Arctiid larvae, Pentatomid adults, and several unknown Lepidopterous larvae. In addition, females were found to be very fond of devouring the males soon after copulation was complete.—GEO. W. BARBER, U. S. Bureau of Entomology, Arlington, Massachusetts.

Tinea acapnopennella Clem.* (Lepid.) Bred from Fungus.

This species was bred August 15, from the fungus *Polyporus tulipiferus* collected at Monmouth Junction, New Jersey, on an old stump. It is already recorded in Smith's "Insects of New Jersey" as occurring at Anglesea, June to August, Essex County (Kf.) and Wenonah, August 20 (Haim.), but no mention is made of the host, *Polyporus tulipiferus*, which is found on the dead wood of deciduous trees. The larva feeds on the fungus and when full grown pupates in the decayed wood to which the fungus is attached.

Full grown larva.—Length 5.5 mm., width 1.35 mm. Subcylindrical, whitish except for head which is dark and a dark, transverse, dorsal area on the first thoracic segment, this area being bisected by a light, median, longitudinal line. Antennae 3-jointed, third joint longest and bearing several fine hairs. Head bears several long, fine hairs. Dorsal surface of second and third thoracic segments transversely wrinkled. Dorsal surface of body bears four longitudinal rows of long, fine hairs, two rows on either side of middle with a few shorter, scattered hairs. Entire dorsal and ventral surface covered with a fine minute pile. True and prolegs well developed.

Pupa.—Length 6 mm., width 1.5 mm. Brownish, sparsely hairy. Dorsal surfaces of abdominal segments 3, 4, 5, 6, 7, and 8 each bear two transverse rows of minute, posteriorly directed spines, these spines becoming larger posteriorly and largest on eighth segment. Last segment bears a minute pair of ventral recurved hooks.

Adult.—This was described by Clemens in 1859 (Proc. Acad. Nat. Sci. Phil., p. 257). Dietz, in his revision of the Tineid subfamilies Amydriinae and Tineinae (Tr. Am. Ent. Soc., vol. xxxi, No. 1), gives a redescription which it is not necessary to repeat here. In this paper the distribution of the species is given as Pennsylvania, District of Columbia, Maryland and Louisiana.—Harry B. Weiss, New Brunswick, New Jersey.

Mr. E. B. Williamson Collecting Odonata in Venezuela.

Messrs. E. B. and J. H. Williamson left Bluffton, Indiana, on January 10, 1920, for a collecting trip in Venezuela, expecting to return about May 15. Writing from that South American country on February 8, in regard to Odonata, Mr. E. B. Williamson says: "One week's collecting at San Esteban, 50 species and about 1300 specimens. *Heteragrion chrysops* on every quebrada. Have a beautiful *Gynacantha*, a *Progomphus* and a *Gomphoides*. *Philogenia* very common, *Palaemnema* rare. *Neoneura esthera* and *Protoneura amatoria* here."

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*Kindly identified by Mr. August Busck.

†Kindly identified by Mr. Erdman West.

Ecology—a New Journal of Entomological Interest.

The Ecological Society of America, at its annual meeting in St. Louis, on December 31, 1919, decided, without a dissenting voice, to start its own serial publication. The Plant World has been generously offered to the Society free of liabilities and will be continued as the official organ of the Society, under the title of "Ecology." The new journal will begin as an illustrated quarterly of about 200 to 300 pages per annum, containing papers by workers in all branches of ecology. Dr. Barrington Moore, of the American Museum of Natural History, has been chosen editor-in-chief. In order to cover the cost of publication, it was voted that the dues of the Society be raised to $3.00 per annum; of this amount $2.00 will be for subscription to the magazine and $1.00 for the running expenses of the Society. It is believed that the new journal will not only be of great value to the members of the Society, but will be necessary to all workers in botany zoölogy, forestry, agriculture and other biological sciences.

French Grants for Entomological Study.

The awards of the Bonaparte and Loutreuil foundations of the Academy of Sciences of Paris, as published in *Science* for February 27, 1920, include one thousand francs to Emile Brumpt for continuing his work on parasitic haemoglobinuria or piroplasmosis of cattle, two thousand francs to P. Lesne for his researches on the insects of peat bogs and two thousand francs to A. Paillot for his researches on the microbial diseases of insects. Entomology will go on in France in spite of the war.

Furcaspis biformis (Homop., Coccidae.)

On July 7, 1892, when judging at a flower show at Kingston, Jamaica, I found a peculiar scale on leaves of orchids. The female scales were dark and round, the male scales equally dark, but elongate. I named it *Aspidiotus biformis*, and in 1908 Lindinger made it the type of a genus *Farcaspis*. Many years have passed since I met with it, but the other day, in a greenhouse at Boulder, Colorado, I found it in abundance on leaves of *Cattleya percivaliana* (Reichb.) O'Brien. The new host plant and entirely new locality are worth recording..—T. D. A. COCKERELL

Mesocyphona rubia (Dipt., Tipulidae).

Last June two of my students, Miss N. Higgins and Miss K. Fitzgerald, captured specimens of an extraordinarily beautiful little Tipulid fly in Boulder. The wings are black, banded and spotted with pure white. I thought the species must be new, but Mr. C. P. Alexander, to whom I sent a sketch, at once suggested comparison with his *Erioptera* (*Meso-*

cyphona) *rubia*, described in 1914 from a unique taken in Arizona. Our insect is manifestly the same, and is a striking addition to the Colorado list. The original figure does not show clearly that the wings are broadly white at base. On the left side only, the specimen before me has an oval white spot at the origin of the sector; this is lacking in the type. It is a singular thing, that while *Erioptera* and its various subgenera or closely related genera are today well represented in North America, no trace of them has been found in the rich Miocene deposits at Florissant, nor in the older Eocene rocks of Colorado and Wyoming. They are, however, found fossil in Europe, so it seems probable that the group originated in the Old World.

T. D. A. COCKERELL, Boulder, Colorado.

Entomological Literature.

COMPILED BY E. T. CRESSON, JR., AND J. A. G. REHN.

Under the above head it is intended to note papers received at the Academy of Natura Sciences, of Philadelphia, pertaining to the Entomology of the Americas (North and South), including Arachnida and Myriopoda. Articles irrelevant to American entomology will not be noted; but contributions to anatomy, physiology and embryology of insects, however, whether relating to American or exotic species, will be recorded.

The numbers in HEAVY-FACED TYPE refer to the journals, as numbered in the following list, in which the papers are published.

All continued papers, with few exceptions, are recorded only at their first installments.

The records of papers containing new genera or species occurring north of Mexico are all grouped at the end of each Order of which they treat.

For records of Economic Literature, see the Experiment Station Record, Office of Experiment Stations, Washington. Also Review of Applied Entomology, Series A, London. For records of papers on Medical Entomology, see Review of Applied Entomology, Series B.

4—Canadian Entomologist, London, Canada. **8**—The Entomologist's Monthly Magazine, London. **10**—Proceedings of the Entomological Society of Washington, D. C. **11**—Annals and Magazine of Natural History, London. **14**—Proceedings of the Zoological Society of London. **16**—The Lepidopterist, Salem, Mass. **20**—Bulletin de la Societe Entomologique de France, Paris. **21**—The Entomologist's Record, London. **22**—Bulletin of Entomological Research, London. **23**—Bollettino del Laboratorio di Zoologia Generale e Agraria, Portici, Italy. **28**—Entomologisk Tidskrift, Uppsala. **29**—Annual Report of the Entomological Society of Ontario, Toronto, Canada. **44**—Ectoparasites. Edited by Jordan & Rothschild, Tring, England. **59**—Journal of Agricultural Research, Washington, D. C. **88**—Occasional Papers of the Museum of Zoology, University of Michigan, Ann Arbor. **106**—Anales de la Sociedad Cientifica Argentina, Buenos Aires.

GENERAL. Anon—Entomology in the United States National Museum. **68,** li, 236–37. **Mallock, H. R. A.**—Some points in insect mechanics. **14,** 1919, 111–116. **Silvestri, F.**—Contribuzioni alla conoscenza degli insetti dannosi e dei loro simbionti. **23,** xiii, 70–192. **Tillyard, R. J.**—The panorpid complex. The wing-venation. **29,** xliv, 533–718. **Tragardh, I.**—On the use of experimental plots when studying

forest insects. **22,** x, 157–60. **Walsingham, Lord.**—Obituary. **8,** 1920, 25–28.

ARACHNIDA, ETC. Brade-Birks & Brade-Birks.—Notes on Myriopoda. Luminous Chilopoda, with special reference to Geophilus carpophagus. **11,** v, 1–30. **Willey, A.**—The house centipede, Cermatia forceps, in Montreal. **4,** 1920, 8. **Wood, H. P.**—Tropical fowl mites in the United States. (U. S. D. A., Dept. Circ., 79).

NEUROPTERA. Brocher, F.—Le mechanisme physiologique de la derniere mue des larves des Agrionides (transformation en imago). (Ann. Biol. Lacustre, Bruxelles, ix, 183–99).

Jordan & Rothschild.—On the species and genera of Siphonaptera described by Kolenati. **44,** i. 61–4. On American bird-Ceratophylli. **44,** i, 65–76. **Snyder, T. E.**—Two new termites from Arizona, **10,** xxii. 38–40.

ORTHOPTERA. Lizer, C.—Informe sobre la expedicion al chaco Boliviano. (Bol. Minist. d. Agric. de la Nacion, Buenos Aires, 45 pp., 1919).

HEMIPTERA. Hussey R. F.—The waterbugs of the Douglas Lake region, Michigan. **88,** No. 75, 23 pp. **Newstead, R.**—Observations on scale-insects (Coccidae). **22,** x, 175–208. **Stoner, D.**—Notes on Scutelleroidea from Vancouver Island. **4,** 1920, 12–13.

Parshley, H. M.—On some Hemiptera from Western Canada. **88,** No. 71, 35 pp.

LEPIDOPTERA. Beutenmuller, W.—The larva of Datana palmi. The larva of Schizura apicalis and Euparthenos nubilis. **16,** iii, 127–8; 133–4. **Gibson, F. M.**—Note on the distribution of Atteva aurea. **4,** 1920, 15. **Hampson, G.**—A classification of the Pyralidae, subfamily Hyposthropinae. **14,** 1918, 55–132. **Joicey & Talbot**—New South American Rhopalocera. **14,** 1917, 259–64. New South American Arctiidae. **14,** 1917, 265–70. A gynandromorph of Papilio lucophron. Three aberrations of L. **14,** 1917, 273–76. **Keller, G. J.**—Notes on the ovum and larva of Catocala herodias. **16,** iii, 121–3. **Ljungdahl, D.**—Nagra puppbeskrivningar. **28,** xl, 97–119. **McDunnough, J.**—Remarks on Hubner's Tentamen. **21,** 1920, 11–13. **Mottram, J. C.**—Some observations upon concealment by the apparent disruption of surface in a plane at right angles to the surface. **14,** 1917, 253–57. **Turner, W. B.**—Lepidoptera at light traps. **59,** xviii, 475–81. **Wagner, H.**—Lepidopterorum catalogus. Pars 23; Sphingidae, Subfam. Choerocampinae.

Swett, L. W.—Some new Geometrids. **16,** iii, 123–5. **Swett & Cassino**—Some new Geometrids. **16,** iii, 128–33 (Cont.). **Wright, W. S.**—Geometrid notes and descriptions. **16,** iii, 125–7.

DIPTERA. Aldrich, J. M.—European fruit fly in North America. **59,** xviii, 451–74. **Bezzi, M.**—Una nuova specie Brasiliana del genere Anastrepha. **23,** xiii, 1–14. **Collins & Hood.**—Life history of Eubiom-

yia calosomae, a tachinid parasite of Calosoma beetles. **59,** xviii, 483–97. **McAtee & Banks.**—District of Columbia D.: Asilidae. **10,** xxii, 13–20. **Macfie, J. W. S.**—The chaetotaxy of the pupa of Stegomyia fasciata. **22,** x, 161–9. **Saunders, W. H.**—Fly investigations Reports. **14,** 1916, 465–518. **Smith & Maxwell Lefroy.**—A comparative study of certain sense-organs in the antennae and palpi of D. **14,** 1919, 31–69.

Dietz, W. G.—Three new crane-flies from eastern Canada. **4,** 1920, 5–8. **Malloch, J. R.**—Descriptions of new genera and species of Scatophagidae. **10,** xxii, 34–38.

COLEOPTERA. Achard, J.—Descriptions de Scaphidiidae inedits de la Republique Argentine. **20,** 1919, 350–2. **Blair, K. G.**—Further notes on the Fabrician types of Heteromera in the Banks Collection. **11,** v, 153–63. **Craighead, F. C.**—Biology of some C. of the families Colydiidae and Bothrideridae. **10,** xxii, 1–13. **Garnett, R. T.**—Variations of Buprestis viridisuturalis. **4,** 1920, 17–18. **Jeannel, R.**—Sur quelques Trechinae (Carabidae) du British Museum. **11,** v, 98–112. **Maulik, S.**—On Cryptostoma beetles in the Cambridge University Museum of Zoology. **14,** 1916, 567–90. **Strickland, E. H.**—The cottonwood leaf-mining beetles in southern Alberta. **4,** 1920, 1–5. **Weiss, H. B.**—Notes on Ischyrus quadripunctatus, bred from fungus. **4,** 1920, 14–15. Notes on Mycotretus pulchra and its fungous host. **4,** 1920, 18–19.

Swaine, Fall, Leng, & Sherman.—The C. collected by the Canadian Arctic Expedition, 1913–18. (Rept., Canadian Arct. Exp., iii, Part E, 24 pp.).

HYMENOPTERA. Grandi, G.—Contributo alla conoscenza degli Agaonini dell' America (Chalcicidae). **23,** xiii, 15–56. **Kieffer, J. J.**—Sur les hymenopteres parasites des ootheques de Mantides. **20,** 1919, 357–9. **Santschi, F.**—Nouveaux formicides de la Republique Argentine. **106,** lxxxvii, 37–57. **Schrottky, C.**—The bee genus Emphor in South America. **4,** 1920, 9–11. **Turner, R. E.**—Notes on the wasps of the genus Pison, and some allied genera. **14,**1916, 591–629.

Doings of Societies

Entomological Section, The Academy of Natural Sciences of Philadelphia

Meeting of May 22, 1919. Twelve persons present, including Dr. Chi Ping, of Kai Fung, China, and Lieut. W. J. Chamberlain, of Corvallis, Oregon, visitors. Director Laurent presiding.

Hymenoptera.—Dr. Bradley said while on a trip to Langtry, Texas, he had seen a large colony of *Sphecius grandis* going into their burrows but had seen none carrying Cicadas, though a boy he had questioned said that he had seen them with their prey. He had also seen *Mutilla orcus* Cress.

going into these burrows and had reached the conclusion that they are parasitic on the *Sphecius*.

Homoptera.—Dr. Skinner exhibited a potted plant on which were many Aphids most of which he had killed by blowing tobacco smoke in a paper cone while covering the plant.

Coleoptera.—Mr. Chamberlain said that he had noticed in the eastern collections, specimens labelled *Acmaeodera pulcherrima* Du Val, distributed mostly by Mr. Beyer. This species is only found in Cuba and Florida and those examined were *A. cubaecola* Du Val.* Had seen a specimen of *Buprestis adjecta* LeC. in the Brooklyn Museum collected on Staten Island about ten days ago, and which he thinks is the most northern record. He has completed an index of all our Buprestidae including synonyms and all available records and where possible the locations of the types.

GEO. M. GREENE, *Recorder.*

Meeting of September 25, 1919, Vice-Director R. C. Williams presiding, and eleven persons present.

Mr. Rehn spoke about the impossibility of obtaining potassium cyanide for making killing bottles to be used on his western trip with Mr. Hebard, but found that sodium cyanide after severe trials proved to be as good, if not better, a killing medium. General discussion followed as to the merits of the various killing agents and of the methods of making killing bottles.

Mr. Rehn gave a brief account of his summer trip, accompanying Mr. Hebard, in the western states, and illustrating his remarks with some photographs projected on the screen.

Lepidoptera.—Dr. Skinner exhibited a gynandromorphic specimen of *Papilio turnus* with the right wings of a yellow male, and the left of a black female. This specimen was collected at Merion, Pa., July 5, 1919, by Geo. F. Pettinos, Jr. Mr. Baylis exhibited bred specimens of *Catocala minerva*, also beautifully executed colored drawings of its larvae showing various instars. Dr. Calvert exhibited pupal skin of *Catocala amatrix* Hüb. with bits of a decaying wooden hand rail in which its cocoon had been found near Cheyney, Pennsylvania, August 8, 1919, as well as the imago which had issued therefrom on August 23 or 24.

Odonata.—Dr. Calvert exhibited the type of *Erpetogomphus schausi* Calv., and the female of *E. diadophis* Calv. (?), both from Guatemala, collected by Messrs. W. Schaus and J. Barnes, described in Entomological News for March, 1919; an immature male of *Neoneura aaroni* Calv., from the same country and collection, a species hitherto unknown from elsewhere than Texas (Ent. News, June, 1919); *Gomphus furcifer* Hagen, a female found floating, headless, in a pond, Stockbridge township, Berkshire County, Massachusetts, July 28, 1917, by the speaker, the only specimen of this species he had met and but rarely recorded from New England.

[*Cf. Van Dyke, Ent. News, xxx, 190.—ED.]

Coleoptera.—Dr. Calvert also exhibited a female and two males of *Calopteron reticulatum* Fab., which latter were apparently attempting to pair simultaneously with the former, all pinned in approximately the positions in which they were found, the female with the four wings outspread, one male above, the other male on the right side of, her abdomen. The speaker had taken them near Cheyney, Pennsylvania, July 16, 1919.

E. T. Cresson, Jr., *Recorder protem*

Meeting of November 20, 1919. Fourteen persons present, including Mr. Allie M. Ross, visitor. Mr. R. C.Williams, Jr., Vice-Director, presiding.

Mr. Williams spoke of meeting C. J. Huguenin and C. L. Fox, while in California. The visitor, Mr. Ross, spoke about his intended work in Liberia, especially his desires of working up the fauna of that region in the Lepidoptera and Orthoptera.

Orthoptera. A series of Mantidae from the Sundan and Papuan regions were exhibited by Mr. Hebard. It was pointed out that many of the genera were new to Philadelphia collections and that some of the species had remained unknown to subsequent authors since their original description. Certain striking forms were discussed, and the difficulties experienced in studying the Orthoptera of the regions in question were pointed out. In determining large series from the regions under consideration, Mr. Hebard said that he had found such studies as Haan's "Bijdragen tot de Kennis der Orthoptera," published in 1842, of the utmost value, but that many contemporary authors were producing a far inferior literature, describing species with deplorable brevity and often giving no figures whatever.

Mr. Rehn exhibited a box containing a series of the West Indian forms of the genus *Eurycotis* of the family Blattidae. The speaker discussed the genus, its distribution, general morphological tendencies in the way of specific differentiation, color types developed in the genus, and the groups into which he had arranged the West Indian forms. Of the West Indian forms exhibited the majority were either recently described or are as yet undescribed.

Lepidoptera. Mr. Reyher exhibited type specimens of *Catocala sapho* var. *cleis.* (Cassino) from Florida, and said that he could find no characters by which to separate this variety from the type form.

E. T. Cresson, Jr., *Recorder pro tem.*

Entomological Workers in Ohio Institutions.

The annual meeting of entomological workers in Ohio institutions was held at the Ohio State University, Columbus, Ohio, January 29,1920. Morning, afternoon and evening sessions were held and the following program rendered.

Symposium: The functions and interrelation of the State Entomological Departments. H. A. Gossard, Entomologist, Experiment Station, Raymond C. Osburn—Head, Department of Zoology and Entomology, Ohio State University and E. C. Cotton, Chief, Bureau of Horticulture.

Herbert Osborn—Notes on Leaf-hoppers. H. E. Evans—The Effect of the Federal Plant Quarantine Act on the Nursery Business. W. M. Barrows—The Changes Which Take Place in Insect and Arachnid Muscle During Metamorphosis. T. L. Guyton—Results of the Use of Magnesium Arsenate as An Insecticide in 1919. W. H. Larrimer, LaFayette, Indiana—Army Worm Control Through County Organization. L. L. Huber—Two Parasites of the Resplendent Shield Bearer. Annette F. Braun—The Study of Microlepidoptera. C. L. Metcalf—The Use of Insect Genitalia in Classification. W. C. Kraatz—Remarks on the Insect Fauna of Mirror Lake. C. H. Kennedy—Life Histories of the Dragon Flies. H. A. Gossard—The Relation of Bees to Fire Blight. E. L. Wickliff—Insect Food of Young Bass. H. L. Dozier—Observations on Some Florida Insects. R. S. McKay—Observations on Orthoptera in Southern Ohio in 1919. E. W. Long—Apiary Inspection in Relation to Entomology. W. V. Balduf—Soy Bean Insect Investigations.

Round Table. The Hessian Fly in Ohio in 1919. T. H. Parks, Leader.

R. C. Osburn—Some Remarks on the Genus *Syrphus*. F. H. Crecker—Distribution of Fresh Water Sponges by Caddis Fly Larvae. J. S. Hine—Blood-Sucking Insects Observed on the Katmai Expedition. E. A. Hartley—Some Observations on Bark Beetle Depredations in Western Yellow Pine in Oregon. P. R. Lowry—Remarks on the Dactylopiinae of Ohio. J. S. Houser—The Onion Maggot.

Exhibits: Microlepidoptera, with Examples of Larval Work—Miss Braun. Differentiating Muscle Cells and Developing Tendons in the Legs of Spiders—Prof. Barrows. 1. Lumbricus terrestris as an Onion Pest. 2. *Sphaerostilbe cocophila* destroying San Jose Scale—Mr. Houser. Map of Periodical Cicada in Ohio in 1919—Prof. Gossard.

New officers elected were as follows: President—J. S. Houser; Vice-President—H. J. Speaker; Secretary—T. H. Parks.

Obituary

Dr. H. C. Wood.

Horatio C. Wood, M. D., LL. D., emeritus professor of Materia Medica, Pharmacy and General Therapeutics in the University of Pennsylvania Medical School, died January 3, 1919. He was born in Philadelphia, January 13, 1841, was educated at the Westtown School and the Friends Select

School and was graduated from the Medical department of the University of Pennsylvania in 1862. He was the author of a number of important medical works and papers and in the beginning of his career devoted much time to natural history and wrote a number of papers on botany. He received honorary degrees from several universities and was a member of many learned Societies, including the National Academy of Sciences. Apparently he did not write on insects proper but the following list* shows his activity in nearly, related fields of natural history before he became active as a practitioner of medicine.

In the *Proceedings of the Academy of Natural Sciences of Philadelphia:*

Descriptions of new species of Scolopendra, in the Collection of the Academy. 1861, 10.

Description of a New Species of Thelyphonus. 1861, 312.

Description of New Species of North American Pedipalpi. 1863, 107.

Description of New Species of North American Polydesmidae. 1864, 6.

Descriptions of New Species of North American Julidae. 1864, 10.

Description of New Genera and Species of North American Myriopoda. 1864, 186.

New Polyzoniidae, Gervais. 1865, 172.

Descriptions of New Species of Myriapoda. 1867, 42.

Notes on a collection of California Myriapoda with the Descriptions of New Eastern Species. 1867, 127.

In the *Journal* of the same:

On the Chilopoda of North America, With a Catalogue of all the Specimens in the Collection of the Smithsonian Institution. V. 5.

On the Pedipalpi of North America. V, 357.

In the *Transactions of the American Philosophical Society:*

North American Myriapoda. 1865, 112 pp., 61 figs. and 3 plates.

On the Phalangia and Pedipalpi Collected by Prof. Orton in Western South America with Descriptions of New Species. 1869, pp. 7.

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*Taken from a privately printed *Bibliographical Record 1860–1890 Horatio C. Wood*, without date or place of publication, 24 and 2 pages, 8vo.; copies in the libraries of the Academy of Natural Sciences of Philadelphia and of the University of Pennsylvania.

Obituary notices of Dr. Wood relating chiefly to his medical career, have appeared in *The Pennsylvania Gazette*, Jan. 16, 1920,(largely reprinted in *Science* for Jan. 30) and *The Alumni Register* (Univ. of Pa.) for Feb., 1920, the last with a portrait.

In the *Proceedings of the Essex Institute:*
Phalangideae of the United States. 1867, 30 pp.

Dr. Wood was Recording Secretary of the Academy of Natural Sciences of Philadelphia, from October 31, 1865, to February 26, 1867.

HENRY SKINNER.

While, aside from his writings along pharmacological and medical lines, perhaps better known for his work on fresh-water algae, Dr. Wood was for a number of years in the earlier part of his scientific career an active and successful student of the Myriopoda and Arachnida. His work on the latter group was confined to the Pedipalpida, Phalangida, and Scorpionida. Beginning with the description of a new Japanese thelyphonid in 1861, he published in this field a number of papers of systematic character of which the most important are his "On the Pedipalpi of North America" (1863) and "On the Phalangeae of the United States" (1868), papers which, in presenting what had been learned of this part of our fauna up to his day together with his own material additions in clear and useful revisional form, have served as a stimulus and starting point for later work. His final paper touching these groups appeared in 1869 and was an account of new South American and African forms.

The period of Dr. Wood's activity on the Myriopoda, as indicated by published papers, extended from 1861 to 1867, apparently terminating with his call to the professorship of botany in the University of Pennsylvania in 1866. His descriptive papers on the North American Myriopoda, published during this period, were the first of importance by an American writer since Say's Myriapodæ of the United States (1821) and have formed the basis for subsequent work. The first paper (1861), an account of new, mostly exotic, species of Scolopendra in the collection of the Academy of Natural Sciences of Philadelphia, was followed two years later by an extensive paper on the Chilopoda of North America in which were listed or described also all the exotic species then in the

collection of the Smithsonian Institution. Four papers following this were descriptive of new North American diplopods. Wood's work on this group culminated in "The Myriapoda of North America" (1865), in which most of his previous work was incorporated and which is still the only single paper dealing with the North American Chilopoda or Diplopoda as a whole. This for the time was an excellent memoir, exhibiting accuracy of observation and a balanced systematic judgment, and showing careful attention to variability and an appreciation, e. g., of the prime importance of the copulatory organs of diplopods in the discrimination of species. Two brief supplementary papers descriptive of additional new North American species appearing in 1867 concluded Wood's work on the Myriopoda.

R. V. Chamberlain, Cambridge, Massachusetts.

In the summer of 1883, Dr. Wood was a member of an expedition to Texas under Colonel, then Major W. R. Livermore, his son, Dr. George B. Wood, writes us. "This was one of a series of explorations for the purpose of finding water, recommending places for roads and new army posts and a correction of old state surveys, when Col. Livermore was triangling the State of Texas west of the Pecos River." On this expedition, either, near El Paso or in the valley of "Tornellias" [Tornillo] creek in the great bend of the Rio Grande, more likely the latter,* Dr. Wood collected two specimens of a "bright brilliant green [beetle] with a slight golden lustre from the surface, tarsi violaceous, legs bright green, tibiae distinctly golden externally," described by Dr. George H. Horn in the *Transactions of the American Entomololgical Society*, xii, page 124, as *Plusiotis woodii*, and dedicated to his friend.

*See Ent. News. xvi, p. 290, xxii, p. 356. A brief account of this expedition, which started July 1 and broke up at the end of October, is contained in Major Livermore's report in the Report of the Chief of Engineers, U. S. Army for 1884, part III, pp. 2394–2395, Washington, 1884.

Oliver Spink Westcott.

Oliver Spink Westcott was born at Wickford, Rhode Island, December 15, 1834 and died at Oak Park, Illinois, July 31, 1919. He graduated at Brown University, Providence, R. I., 1857, and was the last surviving graduate of that year. He also held the degree of Doctor of Science from Brown University. He was a lineal descendant of Stukeley Westcote, who went with Roger Williams from Massachusetts to Rhode Island in 1638.

While he was an educator first, last and always, still he was a noted scientist, mathematician and student of foreign languages, ancient and modern. He was well known as an entomologist having collected for 51 years. It was his custom to spend his vacations from school in some corner of the country collecting insects for future study. He boasted that he had visited and made a stay in every state of the Union, in Mexico, Cuba, Hawaii, Alaska and the several provinces of Canada before he felt called upon to visit Europe. In fact he went to Europe only once. His insect collection of some 45,000 specimens has gone to the State College of Washington, Pullman, Wash. His Entomological Library was sold to John D. Sherman Jr., Mount Vernon, New York.

A notice of Dr. Westcott, with special reference to his connection with the public schools of Chicago, accompanied by a portrait, was published in *The Oak Parker* for August 9, 1919. From it we learn that that connection lasted for fifty-two years.

"Thirty-one years as principal of the old North Division High School, now known as the Robert A. Waller. At the age of 75, Mr. Westcott sent in his resignation to the school board, but was prevailed upon to reconsider. . . . Five years later, on his eightieth birthday, he withdrew from active service. At that time Superintendent Ella Flagg Young wrote: 'On your resignation from the principalship of the Waller High School I cannot refrain from writing you something of my appreciation of the power for intelligence and excellence that you have been in Chicago . . .'

We are indebted to Professor James G. Needham for the clipping from which we have quoted and through him to Mr. Charles Westcott, Dr. Westcott's son, for the biographical

data given above. Through Prof. Needham also, years ago, Dr. Westcott placed the Odonata which he collected on a trip to Tabasco and Chiapas, Mexico, at the service of the Editor for incorporation of the data accompanying them in the *Biologia Centrali-Americana*.

While Dr. Westcott apparently published no extensive papers on entomology, he contributed the following notes to ENTOMOLOGICAL NEWS:

Venturesome Insects [Butterflies], iv, 90–91, March, 1893.

[*Erebus odora* at Racine, Wisconsin], v, 71. March, 1894.

The Assembling of the Cecropia Moth, vi, 136–137, May, 1895.

The Distribution of some N. American Syrphidae, viii, 190–191, Oct., 1897.

Collecting Dragonflies by a Decoy, xvi, 209, Sept., 1905.

Note on *Anatis 15-punctata* and *A. caseyi* n. sp. [Coleop.], xxiii, 422, Nov. 1912.

Scarcity of Early Insects, xxiii, 328–329, July, 1912.

The 1912 swarming of *Aletia argillacea*, xxiv, 84–85, Feb., 1913.

Rarities (Hym., Neur., Odon.), xxvii, 85–86, Feb., 1916.

Misapplied Effort (Odonata), xxvii, 467, Dec., 1916.

Sex Attraction Overcome by Light Stimulation (Lepid., Col.), xxviii, 374–5, Oct., 1917.

Dr. C. G. HEWITT.

The daily papers announced the death of Dr. Charles Gordon Hewitt, dominion entomologist and consulting zoologist, at Ottawa, on March 1, 1920. He was born in Scotland thirty-five years ago and came to Canada in 1909. Previous to and after his settlement on this side of the Atlantic, he published several notable works on the house-fly. In 1913 he was elected a fellow of the Entomological Society of America, in whose meetings he took an interested part. As entomologist and zoologist he was very active in Canada and he will be greatly missed there, as well as on this side of the international line, where we deplore his early death. Detailed biographical notices will doubtless appear in the Canadian journals.

EXCHANGES.

This column is intended only for wants and exchanges, not for advertisements of goods for sale. Notices not exceeding three lines free to subscribers.

☞ These notices are continued as long as our limited space will allow; the new ones are added at the end of the column, and only when necessary those at the top (being longest in) are discontinued.

For Exchange—*Dicerca lepida* Lec. and other Coleoptera in exchange for Buprestidae. J. N. Knull, Hummelstown, Pa.

Catocalae—For exchange—*gracilis, similis, crataegi, ultronia, unijuga, cara, amatrix, concumbens, antinympha, annida, retecta.* E. Baylis, 5011 Saul St., Philadelphia, Pa.

Lepidoptera—*Papaipema arctivorens, eryngii, furcata, circumlucens, pterisii* and *silphii, Apamea immanis* and other Lepidoptera to exchange for fresh mounted specimens. Alex. K. Wyatt, 2445 Eastwood Ave., Chicago, Ill.

Wanted—Journal of Economic Entomology, Vol. I, No. 2. H. R. Painter, U. S. Entomological Laboratory, 628 Yeddo Ave., Webster Groves, Mo.

Wanted—All Saturnians, particularly Hemileucids, and material for breeding them. Offer—*Ornithoptera, Papilio, Hemileuca maia lucina, Pseudohazis eglanterina, shastaensis, hera;* Pupae of *Marumba, Sphinx cerysii* and *gordius, Panthea, Pheosia;* Ova of *Catocala relicta;* etc., and cash. J. D. Sornborger, Rowley, Mass.

Wanted—To purchase literature on Aphididae. Send list to A. C. Baker, East Falls Church, Va.

Will exchange many entomological items for others not in my library, or will buy unusual items of practical value. Can use a photomicrographic lens. J. E. Hallinen, Cooperton, Okla.

Wanted—For cash, or exchange, papers on insect biology, ecology or behavior (especially aculeate Hymenoptera). P. Rau, 2819 S. Kings highway, St. Louis, Mo

Brachynus wanted for cash or exchange from any part of North America. J. W. Green, 520 McCartney St., Easton, Pa.

Lepidoptera Hesperidae wanted.—I will purchase or exchange and also name specimens. South American species particularly desired. Henry Skinner, Logan Square, Philadelphia, Pa.

For Exchange—Iowa Catocalae in A-1 condition. Wanted, Cocoons of Actias luna also other lepidoptera. Mrs. O. F. Hiser, Arnolds Park, Iowa.

Will go to Kauai Island, T. H., to collect insects, etc., in highest altitude, about end of April. Would like some good collector to go along for company. Have been there twice last year. Address, J. Aug. Kusche, Burlingame, San Mateo Co., Cal.

Lepidoptera—Offer many Western species and will collect next month in Colorado desert, S. E. Cal., will exchange or purchase. Desire rarer Noctuids, fresh, full data. Chas. A. Hill, 644 West 36th St., Los Angeles, Cal.

Books Wanted—Entomological News, Vol. 11, Nos. 1, 3, 5; Vol. 14, Nos. 1, 7. Brooklyn Museum Library, Eastern Parkway and Washington Ave., Brooklyn, N. Y.

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(B) Notice.—Upon request printed notices of forthcoming or recently published papers on the desired order or orders will be mailed at frequent intervals. These will be accompanied by a printed return envelope, in which the notice, checked for the desired paper or papers and endorsed across the back with name and address, can be returned with the remittance based upon the prices listed. These notices will also appear at regular intervals in the Society's advertisement in the "Entomological News."

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